

Application No. 09/746,774

**REMARKS**

Figure 11 was disapproved purportedly because Figure 11 introduces new matter. In response, Applicant notes that each word within Figure 11 comprises one of the gerund verbs in Claim 1. Each of such words is found in the specification. As Figure 11 accordingly does not introduce new matter, Figure 11 should be approved.

**Claim Rejections – 35 U.S.C. §112**

Claim 1 is amended to add the word "plastic" when describing the printed circuit (or wiring board). The amendment is fully supported in the Specification at page 7, lines 5-10. Applicant requests that this amendment be entered in order to render the application in better condition for appeal.

Claims 1-5, 7-9, 11, 14-20, 24 and 25 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement purportedly because the specification fails to use the phrase "printed circuit board". In response, Applicant notes that he is European (Dutch) and resides in the Netherlands. In European usage, "printed wiring board" is a more common term for the American term "printed circuit board". In other words, the terms are synonymous. A review of the figures and the text of the specification clearly confirm that "printed wiring board" as used in the specification means "printed circuit board" as that term is understood in the United States.

Accordingly, Applicants prefer that Claim 1 be allowed with the term "printed circuit board" and that a rejection under 35 U.S.C. §112 be withdrawn. In the event that the rejection is not withdrawn, then Applicant requests that the proposed amendment to return the phrase "printed wring board" be entered in order to return claim 1 to the form in which it was originally filed and to obviate this rejection on Appeal.

Application No. 09/746,774

Claim Rejections – 35 U.S.C. §103

Claims 1-3, 5, 7, 11, 14-16, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wang et al (US 5,419,038) in view of Latasiewicz (US 4,316,235). Applicant notes that the last Office Action acknowledges that Wang does not teach or disclose boards with printed circuits. Applicant again reiterates that Wang, which deals with etched silicon interconnectors, is not analogous art to the present invention. Indeed, Wang explicitly teaches away from the present invention by distinguishing its etched circuits from circuits formed by printing:

"Fabricating electrical interconnectors using printed circuit board technology is known in the art. However, using printed circuit board technology effectively limits the number of connections that can be manufactured with each interconnector." Column 1, line 68- Column 2, line 9.

The Office Action insists on calling the substrates in Wang a "circuit board" (see, e.g., top of page 3) and accordingly reasons that the teachings of Wang are "analogous" to the present invention. According to the text of Wang itself, however, Wang deals only with interconnectors. At Column 1, lines 14-16, Wang defines "interconnector" as a component placed onto a circuit board rather than being a circuit board itself. All of Wang, Column 1 through Column 2, line 8 describes interconnectors as components used to connect circuit board components to the circuit board itself. Instead of a board in which a plurality of components can be connected by printed circuits, Wang teaches a technique for saving space on a true circuit board by forming multiple interconnectors, each of which are connected to a single component. The interconnectors taught by Wang are SMALL

Application No. 09/746,774

components formed by thin-film deposition and etching techniques. They are simply not even the size of a typical circuit board.

Applicant included key definitions in its last Amendment to clarify that Wang does NOT teach or disclose "circuit boards" or "wiring boards" Among these definitions is the following:

**"circuit board"** A flat plastic board on which electrically conductive circuits are laminated. *Synonymous with printed circuit board. See adapter, card, and motherboard.* Que's Computer User's Dictionary, 5<sup>th</sup> Edition, 1994.

As disclosed at page 7, lines 5-10 of the Specification, the wiring board of the present invention is comprised of either brittle or flexible plastic. The silicon layers taught by Wang do not qualify within the definition of Que's Computer User's Dictionary, 5<sup>th</sup> Edition 1994.

Similarly, the IEEE definition of "printed circuit board" is as follows:

**"printed-circuit board"** (1) (general). A board for mounting of components on which most connections are made by printed circuitry. (2) (double-sided). A board having printed circuits on both sides. (3) (single sided). A board having printed circuits on one side only. IEEE Standard Dictionary of Electrical and Electronics Terms, 3<sup>rd</sup> Edition, 1984.

The substrates in Wang neither contain any printed circuitry as required in the IEEE definition, nor makes any provision for mounting of components connected by printed circuits.

In summary, Wang is neither a "printed circuit board" nor analogous to the present invention and, in fact, teaches directly away from the present invention.

Application No. 09/746,774

As taught by In re Horn, 203 USPQ 969 (CCPA 1979), even prior art that achieves its result using the same scientific principle as the present invention cannot be used as analogous prior art if one of ordinary skill in the art would not be expected to look at such art:

For the teachings of a reference to be prior art under Section 103, there must be some basis for concluding that the reference would have been considered by one skilled in the particular art working on the pertinent problem to which the invention pertains. In re Horn, id at 971.

One skilled in the particular art of fabricating printed circuit wiring boards would NOT be familiar with the art of thin-film deposition and etching techniques for silicon interconnectors. See also, In re Clay, 966 F.2d 656, 23 USPQ2d 1058 (Fed. Cir. 1992); In re Oeticker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992); Wang Laboratories, Inc. v. Toshiba Corporation, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. (1993)). There is no *prima facie* obviousness as required under 35 U.S.C. 103 without the inclusion of Wang. Accordingly, Claim 1 is allowable as are all claims depending therefrom.

The following arguments were advanced in the previous Amendment and are reiterated herein:

Latasiewicz does not cure the failure of Wang to teach the elements of Claim 1. Latasiewicz fails to teach the tilting step of claim 1 and is nonanalogous art. Specifically, the problem solved in Latasiewicz relates to moving a portion of a printed wiring board upward in order for luminescent diodes on that board to become visible to a human viewing the outside casing of the device (in this case, a clock). As shown in Latasiewicz and explained at Latasiewicz, column 2, lines 53-60, the invention in Latasiewicz requires that the separated substrates be moved in a parallel, raised fashion relative to each other. In contrast, the subject of the present invention is the art of joining separate printed wiring boards in order to conserve two-dimensional space (typically horizontal foot print) of a circuit board. Tilting of one

Application No. 09/746,774

board relative to another allows more features to be packed into the same footprint of a board. As disclosed in the specification, this tilting is generally accomplished by mounting one board perpendicular to the other, which, by definition, is the maximum "tilting" possible. The invention in Latasiewicz teaches away from such tilting since its goal is simply to raise its diode for better viewing. Any orthogonal tilting would actually move the diodes away from the upper viewing window. Latasiewicz, therefore, teaches away from the present invention.

In sum, Latasiewicz not only fails to teach or disclose the tilting element now included in Claim 1, it is nonanalogous art and teaches away from the present invention. Claim 1 is, therefore, allowable over Latasiewicz. All claims that depend from claim 1 are similarly allowable.

Applicant also notes that Claim neither Wang nor Latasiewicz teach the limitations of claim 2. Specifically, the Office Action admits that Wang fails to teach any scoring (which would be non-analogous to semi-conductor fabrication in any event) as provided in claim 2. Latasiewicz similarly teaches away from a scoring operation since the boards in Latasiewicz are separated by pressure upon breakaway portions. See column 2, lines 47-51.

Similarly, neither Wang nor Latasiewicz teaches use of insulated wires as provided by claim 11.

The holding elements of claims 14-16 are also not disclosed or taught by either Wang or Latasiewicz. Claim 14 is not taught since Wang does not teach a holding fixture and Latasiewicz teaches away from a non-planar angle. Claim 15 is not taught since neither reference teaches using a frame member of an assembly to hold one of the substrates. The fixture 38 shown in Latasiewicz is a fixture for applying break-apart pressure use during manufacture. See column 2, lines 47-51. Likewise, the two frame members required by claim 16 are not taught by either reference.

Application No. 09/746,774

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 5,419,038)/Latasiewicz (US 4,316,235) and further in view of Degani et al (US 6,370,766). Degani, however, does not cure the defects of Wang nor teach or disclose the elements of Claim 1, namely, the creation of multiple electrically connected circuit boards from a common substrate, which multiple circuit boards remain electrically connected both before and after separation from the common substrate. No disclosure of tilting the connected boards relative to each other is contained in Degani. As a result, Degani's limited teaching related to testing multiple boards while still in situ on a common board does not supply the elements missing from Latasiewicz. Claim 1, therefore, is allowable over both Latasiewicz and Degani and the combination thereof. Since Claim 1 is allowable, both Claims 1 and 20 are allowable.

Moreover, Degani does not teach the elements of claim 4 for which Degani is cited. Specifically, the testing in Degani by applying external test fixtures does NOT provide a reasonable means for "testing the connection between the first and second circuit patterns" as provided in claim 4. The type of testing in Degani allows for separate testing of each circuit prior to separating rather than connections between the circuits. Claim 4 is therefore allowable regardless of the allowability of claim 1.

Claims 8-9 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 5,419,038)/Latasiewicz (US 4,316,235) as applied to claim 1 above, and further in view of Official Notice. Official Notice, of course, does not teach or disclose the elements of Claim 1, namely, the creation of multiple connected circuit boards from a common substrate, which multiple substrates remain electrically connected both before and after separation from the common substrate. No disclosure of tilting the connected boards relative to each is included within any Official Notice of a method of separating boards. Claim 1, therefore, is allowable over both Latasiewicz and Official Notice of methods of

Application No. 09/746,774

separating boards and the combination thereof. Since Claim 1 is allowable, each of Claims 8-9 and 19 is allowable.

Claims 17 and 24-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 5,419,038)/Latasiewicz (US 4,316,235) as applied to claims 1, 3, and 15 above, and further in view of Feeney (US 3,780,430). Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Latasiewicz (US 4,316,235) in view of Feeney (US 3,780,430). In response, Applicant cannot determine which portion of Feeney teaches holding a substrate in proximity to a sidewall of a cabinet that houses the separated substrates.

Regardless, Feeney does not teach or disclose the elements of Claim 1, namely, the creation of multiple connected circuit boards from a common substrate, which multiple substrates remain electrically connected both before and after separation from the common substrate. No disclosure of tilting the connected boards relative to each other is contained in Feeney. As a result, Feeney's limited teaching of a method of manufacturing multiple boards while still in situ on a common board does not supply the elements missing from Latasiewicz. Claim 1, therefore, is allowable over both Latasiewicz and Feeney and the combination thereof. Since Claim 1 is allowable, each of Claims 8-9 and 19 are allowable.

In sum, Claims 1-5, 7-10 and 14-25 are pending. Each is believed to be in condition for allowance.

Claim 20 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 5,419,038)/Latasiewicz (US 4,316,235) as applied to claims 1 and 3 above, and further in view of Degani et al (US 6,370,766). With respect to claim 20, the external connection for testing taught by Degani is not within the scope of the element of Claim 20 and is irrelevant to Claim 20. Specifically, the external "connection" in Claim 20 is a further limitation upon the "fastening" in the second element of Claim 1. The second element of Claim 1 requires that the fastening be between the first and second circuit patterns, each of which is on the common

Application No. 09/746,774

substrate. No such fastening connection between "the first and second circuit patterns on the common substrate" is taught by Degani. Since Degani only involves external connecting with external testing equipment and not the two circuits on the substrate, it does not involve the "fastening" required by the second element of claim 1 and is therefore irrelevant to Claim 20.

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is hereby authorized to call Applicant's Attorney, Richard Spooner, at Telephone Number (585) 423-5324, Rochester, New York.

Respectfully submitted,

Richard F. Spooner  
Richard F. Spooner  
Attorney for Applicant  
Registration No. 43,928

RFS/hp  
Xerox Corporation  
Xerox Square 20A  
Rochester, New York 14644